Earnings Mispricing of Family Firms: Evidence from U.K.

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Biographical Introduction

André Lopes was born in Portugal in the city of Vila Nova de Gaia on 24th of August of 1991.

In 2014, he graduated from the Polytechnic Institute of Bragança (IPB-ESTIG) obtaining BSc in Management. Since an early stage, he understood the importance of networking and development of soft skills. During his time in Bragança, he joined the students group of the BSc in Management (NEGB), did Erasmus exchange program in Slovakia and in his last year of studies he helped organizing events for Bragança´s Erasmus community.

Later, after concluding his studies, he did an internship in Poland and afterwards he applied to MSc in Finance at the Economics and Management School of the University of Porto (FEP). He got accepted, and while completing the MSc in Finance he occasionally helped at his parent's stationary and started a small project of selling antiques on eBay. Currently, he is looking for an opportunity to start his career.

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Abstract

This work intends to explore and provide an extension to the existing literature on earnings persistence by focusing on U.K. listed family firms. Prior literature has focused on the persistence associated with the earnings' components, cash flows and accruals, with evidence suggesting that there is a difference in the persistence associated with each of the components. Sloan (1996) documents the *Accrual´s Anomaly* suggesting that market participants fixate on reported earnings and fail to price adequately the accrual component of earnings. This generated the possibility of implementing an accruals-based investment strategy that would generate future abnormal returns. Other authors, focused on the persistence of industry-wide and firm-specific earnings and their results suggest a higher persistence associated with the industry and a lower persistence associated with the firm (Brown & Ball, 1967; Hui, Nelson, & Yeung, 2016; Lev, 1983; Magee, 1974). These issues motivate further exploring and this work intends to study the pricing of earnings and earnings components while exploring at the industry level and extending it to the domain of family firms. We base the analysis on a sample of 8,545 firm-year observations from London Stock Exchange (LSE) firms for the period of 2006-2013. This work is relevant since it contributes to the literature concerning (i) earnings components, on what may be the difference in the pricing of accruals and cash flows (ii) the difference in pricing across industry-wide earnings and firm-specific earnings. We find evidence of earning´s underweighting, specifically on the cash flow component of non-family firms. At the industry-level, our results suggest underweighting of firm-specific cash flows of non-family firms. Hence, an underweighting strategy would yield yearly abnormal returns of 1% on earnings, of 1.7% on the cash flows, and 1.4% on firm-specific cash flows. The results were statistically significant although off small economic meaning.

Keywords: Earnings; Accruals; Cash flows; Abnormal Returns; Family Firms.

Index of Contents

1 – Introduction 3

2 – Literature Review 7

2.1 – Earnings 7

2.2 – Market participants and earnings persistence 8

2.3 – Industry earnings and its components 11

2.4 – Ownership structure and family firm's performance 11

3 – Development of Hypothesis 15

4 – Sample, methodology and variable creation 16

4.1 – Sample 16

4.2 – Methodology 17

4.3 – Variables specification 20

4.3.1 – Dependent variable 20

4.3.2 – Independent variables 21

4.3.2.1 – Earnings 21

4.3.2.2 – Earning´s components, accruals and cash flows 21

4.3.2.3 – Industry-wide earnings and firm-specific earnings 22

4.3.2.4 – Industry-wide and firm-specific earnings components 23

4.2.3 – Family firm variables 24

4.2.4 – Creation of deciles 24

5 – Results 27

6 – Conclusion 35

7 – References 37

Index of Tables

Table 1: Sample composition 27
Table 2: Descriptive statistics of the sample 28
Table 3: Correlations between independent variables 29
Table 4: Regression tests of abnormal returns using equation (1a) and (1b) 30
Table 5: Regression tests of abnormal returns using equation (2a) and (2b) 31
Table 6: Regression tests of abnormal returns using equation (3a) and (3b) 32
Table 7: Regression tests of abnormal returns using equation (4a) and (4b) 33

Index of Figures

Figure 1: Relative (dis)advantage of family control 13

1 – Introduction

Firm earnings can be defined as the summation of cash flows and accruals of a company. Cash flows stand for the company´s activity, such as cash inflows and cash outflows, while accruals are associated with the non-cash component of earnings by representing the allocation in time *t* or *t+1*, of both the receipts and disbursements that occurred in *t-n* and those expected to occur in *t+1* (Monsen & Näsi, 2001). The objective of this work is to provide evidence on earnings persistence research field, specifically on the impact of earnings components and their mispricing among the U.K. family firms. To this end, it will be analyzed in detail the way market participants interpret information and price, with the available accounting information, earnings components of family and non-family firms. It will also be scrutinized how firm performance is affected by firm ownership structure.

Prior research on family firms provide heterogeneous results, arising three different perspectives. The first standpoint is the underperformance of family firms (Lins, Volpin, & Wagner, 2013), the second is the overperformance of family firms (Wang, 2006) and the third is, there are no significant differences between the performance of family firms and non-family firms (Anderson & Reeb, 2003). Looking at the theories supporting each of these mixed results, we observe that the main pillars in which overperformance supports itself are both the Agency theory (Jensen & Meckling, 1976) and the "Alignment Effect" (Wang, 2006) while the opposing counter-narrative is driven by the "Entrenchment Effect" (Morck, Shleifer, & Vishny, 1988), managerial inefficiencies (Chandler Jr, 1990), the "Free Riding" (Bruce & Waldman, 1990) and predatory managers (Morck & Yeung, 2003). The first motive of this study is the existence of this varied interpretations on family firm´s performance.

The *Accrual´s Anomaly* was first discovered by Sloan (1996). It consists of a difference on the relative persistence of each of the earnings components. In this phenomenon, those companies who had a higher accrual (cash flow) magnitude in respect to earnings performance would turn out, in the future, to have a lower (higher) likelihood of earnings persistence. Market participants were unable to distinguish this difference in persistence associated with each of the earnings' components leading to a future mis-

pricing, in other words with this misjudgment after the disclosure of companies' annual earnings, those who previously had earnings with high (low) accruals embedded, will turn out to have negative returns (abnormal positive returns) and this can be interpreted as investors are irrational forecasters (Soares & Stark, 2011). After Sloan (1996) many researchers became interested in studying this issue with the intent to discover if the market participants of other stock markets suffer from similar irrationalities. In the particular case of the U.K. recent studies suggest mixed evidence on the existence of an *Accrual Anomaly*. Pincus, Rajgopal, and Venkatachalam (2007) provide evidence that suggests the U.K. as one of the countries in which the *Accrual´s Anomaly* is more intense. On the other hand, Soares and Stark (2009) shows evidence that is somewhat consistence with return predictability and profitable exploitation of the *Accruals' Anomaly* but its intensity is questioned, suggesting it is only felt in small companies. In follow up research, Soares and Stark (2011) corroborates with his previous publication by finding little evidence on the existence of the *Accrual´s Anomaly* after controlling for risk and other variables, however they found signs of a *Cash Flow´s Anomaly*. More recently, Doukakis and Papanastasopoulos (2014) found evidence of mispricing, consistent with the existence of the *Accruals' Anomaly*. Overall, in the U.K, exist mixed evidence regarding stock return anomalies, being our second motive for the development of this study. It seems pertinent to study this matter to know if these anomalies not only appear to exist, but to see if there are differences in the mispricing of family and non-family firms.

We found interesting to study the impact of the industry and how it may affect differently both family and non-family firms. King (1966) found evidence of association between earnings of the firm and the industry where the firm is inserted. More recently, Hui et al. (2016) decomposed industry-wide earnings into industry-wide and firm-specific earnings, subsequently obtaining the industry-wide accruals and cash flows and firm-specific accruals and cash flows. The results suggest a different persistence associated with each of these components, being the most persistent the industry-wide cash flows and the least the firm-specific accruals. Regarding the industry-wide accruals and the firm-specific cash flows, at least in theory, it is unclear which one is the most persistence since a higher (lower) persistence is attributed to industry-wide (firm-specific) performance and a lower (higher) persistence is attributed to the accruals

(cash flows). Also, they found that the investors interpretation was an underreaction (overreaction) to the higher (lower) persistence of industry-wide (firm-specific) earnings, resulting into a mispricing. The third motive of this study is to test, at the industry level, if family firms have significant differences when compared to non-family firms and verify if mispricing exists.

Many researchers have been focusing on *Accrual Anomaly* and *Cash flow Anomaly* (Doukakis & Papanastasopoulos, 2014; Pincus et al., 2007; Soares & Stark, 2009, 2011), other researchers have been studying the industry earnings (Brown & Ball, 1967; Hui et al., 2016; King, 1966; Lev, 1983; Magee, 1974) and others have been studying how the ownership structure impacts firm´s performance (Anderson & Reeb, 2003; Bruce & Waldman, 1990; Morck et al., 1988; Morck & Yeung, 2003; Wang, 2006). Joining these themes together it seems interesting studying if there is earnings mispricing of both family and non-family firms.

This work intends to explore if (i) there are differences in the pricing of earnings between family and non-family firms; (ii) there are differences in the pricing of industry earnings and industry components between family and non-family firms. The period of this study is 8 years, starting in 2006 and ending in 2013. By excluding financial companies, due to their different regulatory and operating environments, we obtained a final sample of 8,545 firm-year observations in which we will test these hypotheses.

Our results suggest earning´s underpricing, specifically on the cash flow component of non-family firms. An underweighting strategy on earnings and cash flows would yield yearly abnormal returns of 1% and 1.7% respectively. Regarding the industry, our results suggest underpricing of firm-specific cash flows only for non-family firms. Hence, an underweighting strategy on firm-specific cash flows would hold 1.4% abnormal returns. All the mentioned results were statistically significant although off small economic meaning.

Throughout this work we will present different author perspectives and relevant definitions, enhanced by the existing literature and theories. The structure of this work is the following. Section 2 reviews prior related literature. Section 3 builds the research questions and its discussion. Section 4 introduces the sample, the methodology and the

variables used. Section 5 presents the results and section 6 produces the conclusions of the study.

2 – Literature Review

In this section, a brief literature review on the earnings persistence topic will be provided. Furthermore, the issue of family firms and how it might have an impact on the pricing of accruals will also be discussed.

2.1 – Earnings

Firm earnings are crucial for investors to assess firm´s performance. They are composed by two components, the cash flow element and the accrual element (Dechow, 1994; Dechow, Kothari, & Watts, 1998). The cash flow component concerns the cash inflows and cash outflows of the company, while the accrual component concerns non-observable cash outcomes that, beforehand, require estimates of future cash results, in other words, represent the liabilities and non-cash assets (Borges, 2015). According to Dechow (1994), to produce earnings two accounting principles must be followed, the matching principle and the revenue recognition principle. The first principle involves matching cash inflows with cash outflows while the second involves considering as revenue both the completed and uncompleted services where cash was not collected yet but is likely to be. These two principles help mitigating cash flow's timing and matching problems, arising in the accrual process. The objective is to, by incorporating the accruals, make earnings a more accurate reflection of firm´s performance when exclusively compared to cash flows. In the literature, some authors defend the use of earnings instead of cash flows for a number of different reasons namely, when companies have long operating cycles, it diminishes the timing and matching problems due to the incorporation of accruals (Dechow, 1994), less information asymmetry for companies with a large ownership distribution (Warfield, Wild, & Wild, 1995) and a stronger forecasting power because they incorporate the negative serial correlation of cash flow changes and include the accruals, being a better predictor than solely cash flows (Dechow et al., 1998). Even though accruals can increase earnings´ forecasting power, in some circumstances it may be preferable to use just cash flows, such as in companies where the op-

erating cycles are short and companies where opportunistic managers may manipulate accruals (Dechow, 1994). This indirectly leads to a lower persistence of accruals when compared to cash flows (Artikis & Papanastasopoulos, 2016). This accrual´s manipulation may occur due to the accruals flexibility in financial reporting, as they derive from management cash flow's judgments and estimates. In the literature authors justify the existence of accruals flexibility to the Generally Accepted Accounting Principles (GAAP) and to the International Financial Reporting Standards (IFRS). These principles are designed to be flexible, to a certain extent, due to its application in different industries and within different geographies (Barth, Cram, & Nelson, 2001; Subramanyam, 1996). However there is a trade-off, even though it can be applied within different industries and geographies, it may allow opportunistic managers to manipulate earnings (Xie, 2001). Opportunistic managers throughout the selection of accounting procedures and accruals, may take advantage of this flexibility to distort the firm earning´s reality for varied reasons such as of their own interests, with the objective of obtaining personal advantages such as bonus (Dechow, 1994; Healy, 1985; Watts & Zimmerman, 1978) subsequently leading companies to report higher earnings (Weetman & Gray, 1991). Artikis and Papanastasopoulos (2016) suggests accruals as less persistence when compared to cash flows, one explanation can be due to earnings manipulation (Xie, 2001).

2.2 – Market participants and earnings persistence

Mishkin (1983) tests market efficiency by comparing the relevant pricing factors of a security at time *t* with the rational *t+1* forecasts of these variables. The assumption underlying it, is that it is not possible to extrapolate abnormal returns using past information, if the market participants are rational. Later, Sloan (1996) discovered, in the U.S., the *Accrual´s Anomaly*. After Sloan (1996), other authors used the Mishkin test to assess market efficiency (Pincus et al., 2007; Soares & Stark, 2011). Nevertheless, the test has its flaws. Pope (2001) suggests that the earnings forecast equation should be decomposed into two, accrual equation and cash flow equation, to avoid the "noise" from omitted variables, Kothari, Sabino, and Zach (2005) advises for its sensitiveness

when treating extreme observations and (Kraft, Leone, & Wasley, 2007) warns for potential survivorship bias due to the obligation of having *t+1* earnings.

The market-based accounting research has focused on examining the relative persistence and pricing of both the accruals and cash flows since the pivot paper was published. Sloan (1996) document an accounting-base anomaly in the U.S. This important finding, the so-called *Accrual´s Anomaly*, directly tests capital market efficiency considering the publicly available information (Doukakis & Papanastasopoulos, 2014). This anomaly consists of a negative correlation between earnings and future stock returns, and as the name suggests, specifically on the accrual component of earnings. More specifically, Sloan (1996) documents a negative relationship between the accrual component and future stock returns. In other words, the higher the accrual magnitude is, in respect to earnings performance, the lower is the likelihood of the earnings being persistence, whilst a higher magnitude of cash flows in respect to earnings performance relates to a more likely persistence. With this miscalculation, in the future when the companies release their annual reports, previously those companies who had high accruals embedded on their earnings will turn out to have negative returns, whereas companies who previously had low accruals embedded on their earnings will turn out to have abnormal positive returns. Later Richardson et al. (2005) rated accruals by its accounting reliability and the results suggest that not only by having high accruals embedded on earnings lead to a lower earning persistence, but the greater the quantity of less reliable accruals incorporated in the accrual component, the more it will contribute to emphasize the lower earnings persistence attributable to the accrual element. This inability and misjudgment shown by market participants can be interpreted as investors are irrational forecasters (Soares & Stark, 2011), as they seem unable to understand the different persistence associated with each of the two components, consequently overestimating the accrual persistence and underweighting the cash flow persistence (Hanlon 2005). This behavior is consistent with earnings fixation hypothesis, thus leading to the creation of a mispricing tendency that will result in overpricing stocks with high accruals and underpricing stocks with low accruals (Richardson, Sloan, Soliman, & Tuna, 2005; Sloan, 1996). As we can observe, investors' decisions based on earnings information may be biased for two main reasons. First, as mentioned before, there is the possibility of earning´s manipulation by opportunistic managers. Second, investors may lack the

knowledge to associate a different persistence to each of the earning's components (Borges, 2015).

After Sloan (1996) discovering the *Accrual´s Anomaly*, many researchers have shown interest in this research field. LaFond (2005) proposes the *Accrual´s Anomaly* as a global phenomenon by finding evidence in several countries. Regarding the specific case of the U.K., Pincus et al. (2007) document evidence towards the U.K. being one of the countries in which the *Accrual´s Anomaly* appears to be more intense. On the other hand Soares and Stark (2009) shows evidence that partially contradicts the *Accrual´s Anomaly* in the U.K., having found lack of the phenomenon´s intensity, suggesting it only exists in small companies. In follow-up research, Soares and Stark (2011) corroborates with his previous paper by finding little evidence on the existence of the *Accrual´s Anomaly*, nonetheless they have found signs of a *Cash Flow´s Anomaly*. More recently, Doukakis and Papanastasopoulos (2014) found evidence of mispricing, consistent with the *Accruals Anomaly´s* existence. The justifications for these mixed results can be the attributed to the different samples used, the years of study and by the mandatory regulatory interventions.

In October 1992 the Financial Reporting Standard No. 3: Reporting Financial Performance (FRS3) was introduced with the objective to reduce earnings management. Chan, Lee, and Lin (2009) studied the impact of the FRS3 and their results propose the *Accrual´s Anomaly* in the U.K. is stronger pre-FRS3 and gets less intense post-FRS3 implementation. The overall inference is the improvement of reported earnings quality post-FRS3 resulted in the reduction of managerial discretionary effects leading investors to obtain a more accurate value of accruals. Overall, if there are differences in the pricing of earnings components of family and non-family firms, it may suggest investor´s judgment of family firms may be more likely to be attributable to the alignment hypothesis or the entrenchment hypothesis.

2.3 – Industry earnings and its components

King (1966) found evidence of the association between earnings and the industry where the company is inserted. In agreement with King (1966), Brown and Ball (1967) and Magee (1974) document evidence on the association between the release of industry-level news and the variability of firm´s earnings. Consistent with these previous findings, Lev (1983) showed there is a high degree of association between earnings persistence and industry competition. More recently Hui et al. (2016) found a higher persistence associated with the industry-wide earnings and a lower persistence attributable to firm-specific earnings. Based on the evidence provided by these authors, for our research we expected the industry-wide earnings to be lesser mispriced than firm-specific earnings and we want to observe if there are differences between family firms and non-family firms. In other words, we want to test if in the U.K. market, by separating the sample into family firms and non-family firms, there is significant differences on the pricing of earnings at the industry level.

2.4 – Ownership structure and family firm's performance

Family firms have a vital role in the society (Che & Langli, 2015) and, as the name suggests, they are directly related with the firm´s ownership structure. In the literature, different authors refer typical characteristics of family firms, such as their predominance in both private and public sectors (Burkart, Panunzi, & Shleifer, 2003), most are private companies (Che & Langli, 2015) and are on average smaller (Lins et al., 2013). Notwithstanding, authors use different considerations on the definition of family firms. To be considered a family firm, authors highlight distinctive features such, a family must have an ownership stake in the company (Anderson & Reeb, 2003; Burkart et al., 2003; Chrisman, Chua, & Litz, 2004), must have family members belonging to the board (Chrisman et al., 2004; Villalonga & Amit, 2006), the successor must be chosen inside family (Anderson & Reeb, 2003; Chrisman et al., 2004), the CEO must be the founder or a family member (McConaughy, Matthews, & Fialko, 2001).

Apart from these slightly different definitions on the family firm concept, there is a big discussion on how firm performance is affected by the ownership structure of the firm (James, 1999). Two competing theories on firm´s ownership and earnings quality emerge, the entrenchment hypothesis and the alignment hypothesis. Chandler Jr (1990) proposes underperformance and the counter-narrative is driven by Jensen and Meckling (1976). On the one hand the entrenchment hypothesis is based on earnings manipulation, on the creation of incentives for controlling shareholders to expropriate wealth from minority´s and on the predictability that corporate assets managed by owner-manager can be less valuable (Morck et al., 1988). On the other hand, the alignment hypothesis suggest the closer the owner and the management is, the less incentives to expropriate exists (Jensen & Meckling, 1976), owner management shows converge of interests (Morck et al., 1988), have incentives to report earnings in good faith and owners may monitor more effectively than a non-family professional executive because it may damage the family's reputation, wealth, and long-term firm performance (Wang, 2006). The Agency theory (Jensen & Meckling, 1976) is based on the existence of conflict of interests (agency problems) and is used by authors as one of the pillars when it comes to argument the alignment hypothesis of family firms. The idea is, owner-managed firms should take insignificant to low agency costs since it is expected to exist an alignment of interests, whereas firms having managers acting as the representative of the principal should suffer from higher agency costs (Jensen & Meckling, 1976). This is often applied to family firms because family members should be altruistic towards each other, leading to lower agency costs (Chrisman et al., 2004). Another reasoning is proposed by Jensen and Meckling (1976) and Shleifer and Vishny (1997), who argue that concentrated corporate ownership leads to better corporate governance. Subsequently family firms are expected to be subject to less agency costs. Agreeing with this rational, Morck and Yeung (2003) argue the more equity in the firm a manager holds, the less likely is of taking actions that may prejudice the value of its shares. This leads to the view that narrowly held firms may reduce agency problems since the ownership of the firm is less widely distributed. Contrary to this view, Chandler Jr (1990) proposes that family firms suffer from managerial inefficiencies and it may affect the competitiveness of the firm. Other arguments used to justify family firms underperformance are, the entrenchment of ineffective managers suggested by Morck et al. (1988), the "free riding"

proposed by Bruce and Waldman (1990) and predatory managers by Morck and Yeung (2003).

Figure 1 sums the theoretical arguments for supporting the entrenchment hypothesis and the alignment hypothesis.

Figure 1: Relative (dis)advantage of family control[1]

	Classical Public Corporation	**Family Firm**
Weaknesses	**Quadrant I** Aggravated Principal-Agent Agency Problems due to Uninvolved Owners	**Quadrant II** Aggravated Principal-Principal Agency Problems due to Concentrated Ownership Less Professional Management due to Retention of Family Control
Strengths	**Quadrant III** Reduced Principal-Principal Agency Problems due to Dispersion of Ownership More Professional Management through External Recruiting	**Quadrant IV** Reduced Principal-Agent Agency Problems due to Unified Ownership and Control Development of Valuable Capabilities due to Stewardly Managers

As we can observe, the ownership structure is a widely studied topic and in the specific case of family firms' performance we detect, different conclusions. Anderson and Reeb (2003) suggest that family firms perform at least as well as non-family firms and, agreeing with this rational; Wang (2006) finds that family ownership, on average, is associated with higher earnings quality; Chrisman et al. (2004) finds, family firms suffer indeed less agency costs; and Ali, Chen, and Radhakrishnan (2007) corroborates by suggesting family firms face less severe agency problems derived by a poorer opportunistic behavior from managers, leading to a lower chance of earnings manipulation. Nevertheless, Lins et al. (2013) propose family firms underperform significantly and this result is aggravated during crisis periods due to investment cuts. Many authors studied family firm´s performance (Anderson & Reeb, 2003; Chrisman et al., 2004; Lins et al., 2013; McConaughy et al., 2001; Villalonga & Amit, 2006) and have achieved widely divergent results which might be explained by the timeframe used, different sample sizes and performance measures (Dyer, 2006). This is intriguing because if managers from family firms are less opportunistic, the accrual component should be more accu-

[1] The table was retrieved from Essen, Carney, Gedajlovic, and Heugens (2015, p. 5)

rate thus, earnings will reflect better the firms' performance, therefore leading to a higher earnings quality, which posteriorly will lead to more accurate forecasts. Following this rationality, Ali et al. (2007) remarks that family firms compared to non-family firms were found to have a lower dispersion of analyst forecasts and smaller forecast errors. It seems important and interesting to study this topic because there is lack of evidence regarding the differences on the accrual component between family and non-family firms plus there is a non-existing consensus regarding the firm performance and ownership structure. In the case of the U.K. there is mixed evidence on the *Accrual´s Anomaly* which motivates the analysis of earning´s pricing.

3 – Development of Hypothesis

On the premise that the market has some level of inefficiency (Fama, 1970) and investors are irrational forecasters (Soares & Stark, 2011) as they seem unable of understanding the different persistence associated with each of reported earnings' components, leading to the creation of a mispricing that resulted in overpricing stocks with high accruals and underpricing stocks with low accruals (Richardson et al., 2005; Sloan, 1996). It is pertinent, since we find little evidence combining investors' forecasting ability and family firms. Thus, it is hypothesized:

Hypothesis 1: There are no differences in the pricing of the earnings components between family and non-family firms.

On the premise that economic theory suggests the industry component of earnings to be more persistence (Brown & Ball, 1967; Hui et al., 2016; King, 1966; Magee, 1974) we intend to study if there are differences in the industry-wide earnings between non-family and family firms. It is pertinent, since we find little evidence combining family firms and industry earnings. Thus, it is hypothesized:

Hypothesis 2: There are no differences in the pricing of industry earnings and industry components between family and non-family firms.

4 – Sample, methodology and variable creation

4.1 – Sample

The sample´s period is 8 years, starting in 2006 until 2013. For our sample selection we follow Lins et al. (2013). The data collection follows four steps: (1) the required accounting information is collected from *Worldscope* database obtaining a total of 52,954 firm-year observations. We then deleted all nonfinancial companies listed in the London Stock Exchange (LSE), being those with ICBIC datatype 8000 such as *8300 (Banks), 8500 (Insurance), 8600 (Real Estate)* and *8700 (Financial Services)*, due to their different regulatory and operating environments. Together with the exclusion of firm year observations from years pre-2006, we archived a total of 11,981 firm-year observations. (2) The previously collected data is then merged with *DataStream* database keeping only those which have industry information, dropping a total of 67 firm-year observations from the sample. (3) We then proceed to the next sample merge, considering the monthly report date plus four months using annual returns. We reach 10,553 firm-year observations. (4) Afterwards we separate the sample into family-firms and non-family firms, through *Amadeus* database, more specifically with the *Family Firms Classification.* We make this separation, considering a firm as a family firm if the family has an equity stake of 25 % or more in the company. To this point, our sample is composed by 9,454 (89.59%) non-family firms firm-year observations and 1,099 (10.41%) family firms firm-year observations. Then, we deleted all firm-year observations containing missing values in the used variables. We obtained a final sample of 8,545 firm-year observations, composed by 7,662 (89.67%) of non-family firms, and 883 (10.33%) of family firms.

After assembling our sample we follow Pincus et al. (2007) empirical methodology for abnormal returns. For the calculation of the earnings and, subsequently, earnings components, we follow Botsari and Meeks (2008) earnings' decomposing method through the cash flow statement. Later, to test for industry, we decompose earnings into industry-wide and firm-specific earnings following and Hui et al. (2016). Our dependent variable is abnormal returns in $t+1$. Our independent variables are earnings, accruals,

cash flows, industry-wide earnings, firm-specific earnings, industry-wide accruals, industry-wide cash flows, firm-specific accruals, firm-specific cash flows and a set of risk control variables, firm size, book-to-market and research and development expenses.

4.2 – Methodology

The methodology used in this paper follows Pincus et al. (2007) for the equation of abnormal returns, in which we create different deciles for all our independent variables. We start by decomposing earnings into its components, accruals and cash flows, following Botsari and Meeks (2008) method via cash flow statement. Next we calculate the industry-wide earnings and firm-specific earnings following Hui et al. (2016) methodology. Afterwards, we proceed to the separation of the components of industry-wide earnings and firm-specific earnings obtaining industry-wide accruals and cash flows and firm-specific accruals and cash flows, respectively. Next, after assembling these variables, we calculate scaled-decile rankings for each variable of firm *i* for each year of the sample (accruals, cash flows, industry earnings, firm-specific earnings, industry-wide accruals, industry-wide cash flows, firm-specific accruals, firm-specific cash flows) with the intent to observe the possible differences between family and non-family firms. Following Pincus et al. (2007), we ranked them by year from zero to nine and divided the decile number by 9 to set each firm-year observation with a value between zero and one. According to Pincus et al. (2007), the estimated coefficients would be similar to a return strategy where investors would go long (short) on that particular variable used in the model.

In equations (1a) and (1b), we model abnormal returns as a function of accounting components and other relevant variables, where the superscript *dec* indicates a transformation of the variable to a scaled-decile variable ranging from zero to one.

$$AR_{t+1} = \beta_0 + \beta_1 Earn\_dec_t + \beta_2 Size\_dec_t + \beta_3 BM\_dec_t + \beta_4 R\&D\_dec_t + \varepsilon_{t+1} \quad (1a)$$

$$AR_{t+1} = \beta_0 + \beta_1 IndE\_dec_t + \beta_2 FirmE\_dec_t + \beta_3 Size\_dec_t + \beta_4 BM\_dec_t + \beta_5 R\&D\_dec_t + \varepsilon_{t+1} \quad (1b)$$

Where:

AR_{t+1}	:	Abnormal return in year *t+1*;
$Earn\_dec_t$	:	Earnings decile in year *t*;
$IndE\_dec_t$	:	Industry-wide earnings decile in year *t*;
$FirmE\_dec_t$	:	Firm-specific earnings decile in year t;
$Size\_dec_t$	:	Size decile in year *t*;
BM_dec_t	:	Book-to-Market decile in year *t;* and
$R\&D\_dec_t$	:	Research and development decile in year *t*.

Afterwards we decomposed earnings into its elements[2], and we substitute earnings from our model (*Earn*) by the accrual component (*ACC*) and the cash flow component (*CF*) obtaining the model 2a. In model 2b we added the industry earnings components[3], the industry-wide accruals (*IndACC*) and the industry-wide cash flows (*IndCF*), the firm-specific accruals (*FirmACC*) and the firm-specific cash flows (*FirmCF*).

$$AR_{t+1} = \beta_0 + \beta_1 ACC\_dec_t + \beta_2 CF\_dec_t + \beta_3 Size\_dec_t + \beta_4 BM\_dec_t + \beta_5 R\&D\_dec_t + \varepsilon_{t+1} \quad (2a)$$

$$AR_{t+1} = \beta_0 + \beta_1 IndACC\_dec_t + \beta_2 IndCF\_dec_t + \beta_3 FirmACC\_dec_t + \beta_4 FirmCF\_dec_t + \beta_5 Size\_dec_t + \beta_6 BM\_dec_t + \beta_7 R\&D\_dec_t + \varepsilon_{t+1} \quad (2b)$$

[2] The accruals and cash flows were calculated following Botsari and Meeks (2008) cash flow statement approach.

[3] The industry components were calculated following Hui, Nelson et al. (2016).

Where:

ACC_dec_t	:	Accruals decile in year *t*;
CF_dec_t	:	Cash flows decile in year *t*;
$IndACC\_dec_t$	:	Industry accruals decile in year *t*;
$IndCF\_dec_t$	:	Industry cash flows decile in year *t*.
$FirmACC\_dec_t$	:	Firm-specific accruals decile in year *t*; and
$FirmCF\_dec_t$	:	Firm-specific cash flows decile in year *t*.

Then we introduce to our model family variables. In model 3a we added family earnings (*Earn_fd*). In model 3b we add industry-wide earnings of family firms (*IndE_fd*) and firm-specific earnings of family firms (*FirmE_fd*).

$$AR_{t+1} = \beta_0 + \beta_1 Earn\_dec_t + \beta_2 Earn\_fd\_dec_t + \beta_3 Size\_dec_t + \beta_4 BM\_dec_t + \beta_5 R\&D\_dec_t + \varepsilon_{t+1} \quad (3a)$$

$$AR_{t+1} = \beta_0 + \beta_1 IndE\_dec_t + \beta_2 IndE\_fd\_dec_t + \beta_3 FirmE\_dec_t + \beta_4 FirmE\_fd\_dec_t + \beta_5 Size\_dec_t + \beta_6 BM\_dec_t + \beta_7 R\&D\_dec_t + \varepsilon_{t+1} \quad (3b)$$

In model 4a we introduced family accruals (*ACC_fd*) and cash flows (*CF_fd*). In model 4b we added the industry-wide accruals (*IndACC_fd*), industry-wide cash flows (*IndCF_fd*), firm-specific accruals (*FirmACC_fd*) and firm-specific cash flows (*FirmCF_fd*).

$$AR_{t+1} = \beta_0 + \beta_1 ACC\_dec_t + \beta_2 CF\_dec_t + \beta_3 ACC\_fd\_dec_t + \beta_4 CF\_fd\_dec_t + \beta_5 Size\_dec_t + \beta_6 BM\_dec_t + \beta_7 R\&D\_dec_t + \varepsilon_{t+1} \quad (4a)$$

$$AR_{t+1} = \beta_0 + \beta_1 IndACC\_dec_t + \beta_2 IndCF\_dec_t + \beta_3 FirmACC\_dec_t + \beta_4 FirmCF\_dec_t + \beta_5 IndACC\_fd\_dec_t + \beta_6 IndCF\_fd\_dec_t + \beta_7 FirmACC\_fd\_dec_t + \beta_8 FirmCF\_fd\_dec_t + \beta_9 Size\_dec_t + \beta_{10} BM\_dec_t + \beta_{11} R\&D\_dec_t + \varepsilon_{t+1} \quad (4b)$$

4.3 – Variables specification

4.3.1 – Dependent variable

Following previous literature (Pincus et al., 2007), we model abnormal returns as follows:

$$AR_{t+1} = \ Annual\ Return_{i,t} - Size\ Portfolio\ Return_t$$

AR_{t+1} represents the difference between the raw returns of company *i*, at time *t* and the size-based return for the firm matched decile at time *t.* It is measured four months after the fiscal year end. Annual returns are measured as:

$$Annual\ Return_{i,j,t} = \frac{Return\ Index_{t\ +12} - Size\ Portfolio\ Return_t}{Return\ Index_t}$$

Return Index $_{t+12}$ represents *Datastream RI* datatype. For the *Size Portfolio Return*, at the end of each month *t-1*, firms were assigned to size-based deciles, and the matched size decile average of the portfolio firms for the following twelve months, were used as the benchmark returns (see, for example, Soares and Stark (2009) for an implementation of this risk control approach).

4.3.2 – Independent variables

4.3.2.1 – Earnings

We start by measuring earnings according to Botsari and Meeks (2008). Calculated as follows:

$$Earn_{i,j,t} = \frac{NI}{Avg\ Total\ Assets}$$

The variable $Earn_{i,j,t}$ regards earnings for firm *i*, in industry *j* at year *t*. *NI* represents the *Net Income (Worldscope 04001)*. On the denominator, *Avg Total Assets*, is calculated by the average between *Total Assets (Worldscope 02999)* in year *t* and *t+1*.

4.3.2.2 – Earning´s components, accruals and cash flows

The calculation of the cash flows (CF_t) and accruals (ACC_t) is done according to Botsari and Meeks (2008).

$$ACC_{i,t} = \frac{NI - (FO + FOOA)}{Avg\ Total\ Assets}$$

The variable ACC_t represents accruals for firm *i* in year *t*. *NI* represents the *Net Income* (*Worldscope 04001), FO* represents *Funds from Operations* (*Worldscope 04201*) and *FOOA* represents *Funds from/for Other Operating Activities* (*Worldscope*

04831). On the denominator, *Avg Total Assets,* is calculated by the average between *Total Assets (Worldscope 02999)* in year *t* and *t+1*.

$$CF_{i,t} = \frac{FO + FOOA}{Avg\ Total\ Assets}$$

The variable CF_t corresponds to the cash flows for firm i in year t. *FO* represents *Funds from Operations (Worldscope 04201)* and *FOOA* represents *Funds from/for Other Operating Activities (Worldscope 04831)*. On the denominator, *Avg Total Assets*, is calculated by the average between *Total Assets (Worldscope 02999)* n year *t* and *t+1*.

4.3.2.3 – Industry-wide earnings and firm-specific earnings

Following the methodology used in Hui et al. (2016) we decomposed earnings into industry-wide earnings and firm-specific earnings.

$$IndE_{j,t} = \frac{1}{N} \Sigma_i^N \quad Earn_{j,t}$$

The variable $IndE_{j,t}$ represents industry-wide earnings for industry *j* at year *t*. After calculating the industry-wide earnings, we can obtain the firm-specific earnings.

$$FirmE_{i,j,t} = Earn_{i,j,t} - IndE_{i,j}$$

The variable $FirmE_{i,j,t}$ represents firm-specific earnings for firm *i*, in industry *j* at year *t*.

4.3.2.4 – Industry-wide and firm-specific earnings components

Further decomposing, as suggested in Hui et al. (2016), the industry-wide earnings ($IndE_t$) become industry-wide accruals ($IndACC_t$) and industry-wide cash flow ($IndCF_t$).

$$IndACC_{j,t} = mean(ACC_{j,t})$$

The variable $IndACC_t$ represents industry-wide accruals for all firms in industry *j* in year *t*.

$$IndCF_{j,t} = IndE_{j,t} - IndACC_{j,t}$$

The variable $IndCF_t$ represents industry-wide cash flows for all firms in industry *j* at time *t*.

$$FirmACC_{i,t} = ACC_t - IndACC_t$$

The variable $FirmACC_{i,t}$ represents firm-specific cash flows of firm *i* in year *t*.

$$FirmCF_{i,t} = FirmE_t - FirmACC_t$$

The variable $FirmCF_{i,t}$ represents firm-specific cash flows of firm *i*, in year *t*.

4.2.3 – Family firm variables

After calculating these previously mentioned variables, it is important to differentiate family firms from non-family firms. We created a dummy variable that would effectively separate family firm's observations from other firms, leading to the creation of the variable *family*. We considered a firm as a family firm if the family had a 25% or higher equity stake. Being the *family (fd)* a binary variable in which 0 means non-family and 1 means family, we multiplied each of the previously calculated variables by it to obtain family firm's results. This lead to the following variable construction:

Where:

$Earn\_fd_t$: *Earn*fd*;
ACC_fd_t : *ACC*fd*;
CF_fd_t : *Earn*fd*;
$IndE\_fd_t$: *IndE*fd*;
$IndACC\_fd_t$: *IndACC*fd*;
$IndCF\_fd_t$: *IndCF*fd*;
$FirmCF\_fd_t$: *FirmCF*fd*; and
$FirmACC\_fd_t$: *FirmACC*fd*.

4.2.4 – Creation of deciles

After the variables assemblage, we then created a decile[4] variable for each of the variables.

Where:

$Earn\_dec_t$: earnings decile in year *t*;
ACC_dec_t : accruals decile in year *t*;
CF_dec_t : cash flow decile in year *t*;

[4] The decile variables were created using Stata command xtile.

$IndE\_dec_t$	:	industry earnings decile in year *t*;
$IndACC\_dec_t$	:	industry accruals decile in year *t*;
$IndCF\_dec_t$	:	industry cash flows decile in year *t*;
$FirmE\_dec_t$	:	firm-specific earnings decile in year *t*;
$FirmACC\_dec_t$	:	firm-specific accruals decile in year *t*; and
$FirmCF\_dec_t$	:	firm-specific cash flows decile in year *t*.

Regarding family firms, we multiplied the above-mentioned deciles by *family*.

Where:

$Earn\_dec\_fd_t$	:	*Earn_dec*fd*;
$ACC\_fd\_dec_t$	:	*Acc_dec*fd*;
$CF\_dec\_fd_t$	:	*CF_dec*fd*;
$IndE\_dec\_fd_t$	:	*IndE_dec*fd;*
$IndACC\_dec\_fd_t$	:	*IndACC_dec*fd*;
$IndCF\_dec\_fd_t$	:	*IndCF_dec*fd*;
$FirmE\_fd\_dec_t$	:	*FirmE_dec*fd;*
$FirmACC\_fd\_dec_t$	:	*FirmACC_dec*fd*; and
$FirmCF\_fd\_dec_t$	:	*FirmCF_dec*fd*.

Also, we created risk variables such as size decile (*Size_dec*) book-to-market decile (*BM_dec)* and research and development decile (*R&D_dec*). In the current literature, the use of these variables is suggested because they are likely to be useful in earnings' forecast (see Soares and Stark (2009)).

To calculate the book-to-market decile we used the following formula:

$$BM\_dec = \frac{TSE}{MC}$$

Where *TSE* represents the *Total shareholder´s Equity* (*Worldscope 03995)* and *MC* represents the *Market Capitalization in the Fiscal Period End* (*Worldscope 08002).*

To calculate research and development decile variable, we used the following formula:

$$R\&D\_dec = \frac{R\&D}{MC}$$

Where *R&D* accounts for *Research & Development Expense (Worldscope 01201),* and *MC* represents the *Market Capitalization in the Fiscal Period End (Worldscope 08002).*

5 – Results

In this section, we present the sample composition, mean statistics, the correlations and the regression results. On panel A of table 1, we can see the distribution of the sample per year. Each year embodies a range of the sample firm-year observations between 10.93% and 14.27%. In the case of family firms, we see that each year represents between 9.06% and 15.63%. On panel B of table 1, we see the distribution of the sample across industries. Each industry represents between 0.42% to 24.70% of the sample. Regarding family firms, each industry represents between 0.23% to 26.27%.

Table 1: Sample composition

Panel A: Sample by year

Year	Firm-year observations	%	Family	%
2006	1,219	14.27	103	11.66
2007	1,204	14.09	109	12.34
2008	1,145	13.40	138	15.63
2009	1,070	12.52	127	14.38
2010	1,028	12.03	80	9.06
2011	999	11.69	95	10.76
2012	946	11.07	112	12.68
2013	934	10.93	119	13.48
Total years	**8,545**	**100.00**	**883**	**100.00**

Panel B: Sample by industry

ICBSSC	Industry Sector	Firm-year observations	%	Family	%
500	*Oil & Gas*	767	8.98	38	4.30
1300	*Chemicals*	140	1.64	3	0.34
1700	*Basic Resources*	931	10.90	71	8.04
2300	*Construction & Materials*	249	2.91	32	3.62
2700	*Industrial Goods & Services*	2,111	24.70	232	26.27
3300	*Automobiles & Parts*	36	0.42	2	0.23
3500	*Food & Beverage*	263	3.08	17	1.93
3700	*Personal & Household Goods*	443	5.18	66	7.47
4500	*Health Care*	664	7.77	50	5.66
5300	*Retail*	436	5.10	46	5.21
5500	*Media*	626	7.33	83	9.40
5700	*Travel & Leisure*	526	6.16	69	7.81
6500	*Telecommunications*	131	1.53	24	2.72
7500	*Utilities*	161	1.88	14	1.59
9500	*Technology*	1,061	12.42	136	15.40
All industries		**8,545**	**100.00**	**883**	**100.00**

Table 2 presents descriptive statistics. Panel A, B and C provide data for all firms, family firms and non-family firms respectively. On average, both family and non-family have negative earnings, accruals and cash flows. At industry level, on average, we observe for both family and non-family negative industry-wide earnings, accruals and cash flows, and positive firm-specific earnings, accruals and cash flows.

Table 2: Descriptive statistics of the sample

Panel A: All firms (8,545 annual firm-year observations)				
Variable	**Mean**	**Std. dev.**	**P10**	**P90**
$Earn_t$	-0.087	0.701	-0.415	0.168
ACC_t	-0.065	0.571	-0.212	0.077
CF_t	-0.021	0.363	-0.258	0.188
$IndE_t$	-0.126	0.154	-0.301	-0.014
$IndACC_t$	-0.086	0.105	-0.158	-0.021
$IndCF_t$	-0.040	0.106	-0.164	0.037
$FirmE_t$	0.040	0.700	-0.262	0.338
$FirmACC_t$	0.021	0.571	-0.140	0.195
$FirmCF_t$	0.184	0.362	-0.205	0.254

Panel B: Family firms (883 annual firm-year observations)				
Variable	**Mean**	**Std. dev.**	**P10**	**P90**
$Earn_t$	-0.059	0.635	-0.288	0.202
ACC_t	-0.049	0.367	0.180	0.099
CF_t	-0.010	0.490	-0.198	0.217
$IndE_t$	-0.110	0.153	-0.264	-0.002
$IndACC_t$	-0.083	0.112	-0.134	-0.003
$IndCF_t$	-0.026	0.105	-0.139	0.039
$FirmE_t$	0.050	0.646	-0.181	0.358
$FirmACC_t$	0.034	0.378	-0.128	0.212
$FirmCF_t$	0.015	0.494	-0.190	0.274

Panel C: Non-family firms (7,662 annual firm-year observations)				
Variable	**Mean**	**Std. dev.**	**P10**	**P90**
$Earn_t$	-0.090	0.709	-0.426	0.1611
ACC_t	-0.067	0.590	-0.215	0.073
CF_t	-0.023	0.345	-0.264	0.183
$IndE_t$	-0.128	0.154	-0.301	-0.014
$IndACC_t$	-0.867	0.104	-0.162	-0.021
$IndCF_t$	-0.041	0.106	-0.168	0.037
$FirmE_t$	0.038	0.706	-0.271	0.335
$FirmACC_t$	0.020	0.589	-0.141	0.194
$FirmCF_t$	0.019	0.344	-0.207	0.251

Earn_t is earnings for year *t*, defined as *Net Income (Worldscope 04001)* scaled by average *Total Assets (Worldscope 02999).* CFt is cash flow for year t defined as *Funds from Operations (Worldscope 04201)* plus *Funds from/for Other Operating Activities (Worldscope 04831)* scaled by *Total Assets (Worldscope 02999)*. ACC_t is the result between the sum of *Net Income (Worldscope 04001*) minus Funds from Operations (*Worldscope 04201*) *minus*

Funds from/for Other Operating Activities (Worldscope 04831) scaled by *Total Assets (Worldscope 02999)*. $IndE_t$ is industry-wide earnings for year *t*, defined as average $Earn_t$ across sample firms in the same *ICBSSC* industry. $IndACC_t$ is the industry-wide accruals for year *t*, defined as $IndE_t$ minus $IndCF_t$. $IndCF_t$ is the industry-wide cash flows for year *t*, defined as the average CF_t across firms in the same *ICBCCS* industry. $FirmE\_dec_t$ is firm-specific earnings decile for firm *i*, in industry *j* for year *t*, defined as the difference between $Earn_t$ and $IndE_t$. $FirmACC_t$ is firm-specific accruals for year *t*, defined as $FirmE_t$ minus $FirmCF_t$. $FirmCF_t$ is firm-specific cash flows for year *t*, defined as CF_t minus $IndCF_t$.

In table 3 we observe the correlation coefficient between the variables used in this work. We can see differences between the Pearson and Spearman correlation coefficients which may indicate the influence of extreme observations.

Table 3: Correlations between independent variables

Panel A: Pearson correlation

	$Earn_t$	ACC_t	CF_t	$IndE_t$	$IndACC_t$	$IndCF_t$	$FirmEt$	$FirmACC_t$	$FirmCF_t$
$Earn_t$	1								
ACC_t	**0.8743**	1							
CF_t	**0.5580**	**0.0850**	1						
$IndE_t$	**0.1246**	**0.0451**	**0.1787**	1					
$IndACC_t$	**0.1292**	**0.1012**	**0.0923**	**0.7272**	1				
$IndCF_t$	**0.0535**	**-0.0344**	**0.1686**	**0.7348**	**0.0689**	1			
$FirmEt$	**0.9764**	**0.8675**	**0.5211**	**-0.0926**	**-0.0286**	**-0.1064**	1		
$FirmACC_t$	**0.8533**	**0.9843**	**0.0688**	**-0.0839**	**-0.0761**	**-0.0467**	**0.8746**	1	
$FirmCF_t$	**0.5442**	**0.0960**	**0.9529**	**-0.0466**	**0.0715**	**-0.1385**	**0.5563**	**0.0835**	1

Panel B: Spearman correlation

	$Earn_t$	ACC_t	CF_t	$IndE_t$	$IndACC_t$	$IndCF_t$	$FirmEt$	$FirmACC_t$	$FirmCF_t$
$Earn_t$	1								
ACC_t	**0.4982**	1							
CF_t	**0.7548**	**-0.0429**	1						
$IndE_t$	**0.2723**	**0.1426**	**0.2433**	1					
$IndACC_t$	**0.2296**	**0.1597**	**0.1661**	**0.6789**	1				
$IndCF_t$	**0.2366**	**0.0914**	**0.2399**	**0.8317**	**0.2615**	1			
$FirmEt$	**0.7701**	**0.4161**	**0.5790**	**-0.2713**	**-0.1763**	**-0.2243**	1		
$FirmACC_t$	**0.3531**	**0.8075**	**-0.0980**	**-0.2020**	**-0.3358**	**-0.0474**	**0.5288**	1	
$FirmCF_t$	**0.6057**	**-0.0706**	**0.8223**	**-0.1735**	**0.0349**	**-0.2507**	**0.7246**	**-0.0598**	1

Notes: Bold type indicates significance at the 5% level or better

We will now present the regression results. Similar to Sloan (1996) we want to test if there is mispricing of earnings and its components. Our strategy relies on the construction of yearly basis deciles rankings for each of the independent variables. Following Fama and French (1998) and Pincus et al. (2007) we model *t+1* abnormal returns with the following variables, earnings *(Earn_dec)* and its components *(ACC_dec* and *CF_dec)*, firm size *(Size_dec)*, book-to-market *(BM_dec)*. We incorporate in the model

the variable research and development *(R&D_dec)*, the industry-wide earnings *(IndE_dec)* and its components (*IndACC_dec* and *IndCF_dec*), firm-specific earnings *(FirmE_dec)* and its components (*FirmACC_dec* and *FirmCF_dec*). The results are shown in table 4.

According to Pincus et al. (2007), the coefficients provide the marginal return in a strategy that will be short (long) in a certain variable. For instance, if accruals have a negative (positive) coefficient it would be interpreted as an overpricing (underpricing) of the information contained in accruals. The evidence presented in panel A suggest underpricing of earnings, in other words we find evidence in which an underweighting strategy would earn a yearly abnormal return of 1%. The evidence presented in panel B does not provide any statistically significant findings.

Table 4: Regression tests of abnormal returns using equation (1a) and (1b)

Panel A: Equation 1a					
Variable	**Coefficient**	**Std. Error**	***t*-Stat**	**P>|t|**	
Intercept	-0.106	0.326	-3.25	0.001	***
$Earn\_dec_t$	0.010	0.003	2.84	0.005	***
$Size\_dec_t$	0.009	0.003	2.85	0.004	***
BM_dec_t	0.009	0.003	2.75	0.006	***
$R\&D\_dec_t$	0.019	0.007	2.72	0.007	***
Adjusted R^2					0.006
Observations					8,545

Panel B: Equation 1b					
Variable	**Coefficient**	**Std. Error**	***t*-Stat**	**P>|t|**	
Intercept	-0.010	0.378	-2.64	0.008	***
$IndE\_dec_t$	0.003	0.004	0.75	0.455	
$FirmE\_dec_t$	0.006	0.004	1.56	0.119	
$Size\_dec_t$	0.010	0.004	3.11	0.002	***
BM_dec_t	0.008	0.004	2.56	0.010	***
$R\&D\_dec_t$	0.017	0.007	2.56	0.010	***
Adjusted R^2					0.006
Observations					8,545

In panel A, we present the results of estimating the following abnormal returns regression $AR_{t+1} = \beta_0 + \beta_1 Earn\_dec_t + \beta_2 Size\_dec_t + \beta_3 BM\_dec_t + \beta_4 R\&D\_dec_t + e_{t+1}$. In panel B, we present results of the following regression $AR_{t+1} = \beta_0 + \beta_1 IndE\_dec_t + \beta_2 FirmE\_dec_t + \beta_3 Size\_dec_t + \beta_4 BM\_dec_t + \beta_5 R\&D\_dec_t + e_{t+1}$. *Earn_dec*$_t$ is earnings decile for year *t*, defined as *Net Income (Worldscope 04001)* scaled by average *Total Assets (Worldscope 02999)* in *t* and *t+1*. *IndE_dec*$_t$ is industry-wide earnings decile in year *t*, defined as average *Earn*$_t$ across sample firms in the same *ICBSSC* industry. *FirmE_dec*$_t$ is firm-specific earnings decile for firm *i*, in industry *j* for year *t*, defined as the difference between *Earn*$_t$ and *IndE*$_t$. *Size_dec*$_t$ is size decile in year *t*. *BM_dec*$_t$ is book-to-market decile in year *t*, defined as *Total Shareholder´s Equity (Worldscope 03995)* scaled by *Market Capitalization in the Fiscal Period End (Worldscope 08002)*. *R&D_dec*$_t$ is research and development decile in year *t*, and is defined as *R&D Expense (Worldscope 01201)* scaled by *Market Capitalization in the Fiscal Period End (Worldscope 08002)*. *, ** and *** indicate statistical significance at the two-tailed 10%, 5%, and 1% level, respectively.

On panel A of table 5 we tested for earning´s components. Following Pincus et al. (2007) interpretation, we find evidence of cash flow underpricing, in which an under-weighting strategy would hold yearly abnormal returns of 1.7%. On panel B, we tested for industry-wide and firm-specific earnings components. Our findings suggest under-weighting of firm-specific cash flows in which an underweighting strategy would earn a yearly abnormal return of 1.4%.

Table 5: Regression tests of abnormal returns using equation (2a) and (2b)

Panel A: Equation 2a					
Variable	**Coefficient**	**Std. Error**	***t*-Stat**	**P>|t|**	
Intercept	-0.121	0.036	-3.37	0.001	***
ACC_dec_t	-0.003	0.003	-0.80	0.424	
CF_dec_t	0.017	0.003	5.07	0.000	***
$Size\_dec_t$	0.008	0.003	2.24	0.025	**
BM_dec_t	0.010	0.003	2.91	0.004	***
$R\&D\_dec_t$	0.019	0.007	2.72	0.006	***
Adjusted R^2				0.009	
Observations				8,545	

Panel B: Equation 2b					
Variable	**Coefficient**	**Std. Error**	***t*-Stat**	**P>|t|**	
Intercept	-0.122	0.046	-2.68	0.007	***
$IndACC\_dec_t$	0.001	0.004	-0.09	0.926	
$IndCF\_dec_t$	0.003	0.004	0.81	0.416	
$FirmACC\_dec_t$	-0.002	0.004	-0.56	0.575	
$FirmCF\_dec_t$	0.014	0.035	4.04	0.000	***
$Size\_dec_t$	0.009	0.003	2.58	0.010	***
BM_dec_t	0.009	0.003	2.70	0.007	***
$R\&D\_dec_t$	0.018	0.007	2.57	0.010	***
Adjusted R^2				0.007	
Observations				8,545	

In panel A, we present the results of estimating the following abnormal return regression $AR_{t+1} = \beta_0 + \beta_1 ACC\_dec_t + \beta_2 CF\_dec_t + \beta_3 Size\_dec_t + \beta_4 BM\_dec_t + \beta_5 R\&D\_dec_t + e_{t+1}$. In panel B, we present results of the following regression $AR_{t+1} = \beta_0 + \beta_1 IndACC\_dec_t + \beta_2 IndCF\_dec_t + \beta_3 FirmACC\_dec_t + \beta_4 FirmCF\_dec_t + \beta_5 Size\_dec_t + \beta_6 BM\_dec_t + \beta_7 R\&D\_dec_t + e_{t+1}$. ACC_dec_t is accruals decile for year *t*, defined as *Net Income (Worldscope 04001)* minus *Funds from Operations (Worldscope 04201)* minus *Funds from/for Other Operating Activities* (*Worldscope 04831*) scaled by average *Total Assets (Worldscope 02999)* in *t* and *t+1*. CF_dec_t is cash flow decile for year *t*, defined as *Funds from Operations (Worldscope 04831)* plus *Funds from/for Other Operating Activities* (*Worldscope 04831*) scaled by average *Total Assets (Worldscope 02999)* in *t* and *t+1*. $IndACC\_dec_t$ is the industry-wide accruals decile in year *t*, defined as average ACC_t across sample firms in the same *ICBSSC* industry. $IndCF\_dec_t$ is the industry-wide cash flows decile in year *t* and is the difference between $IndE_t$ and $IndACC_t$. $FirmACC\_dec_t$ is the firm-specific accruals decile for year *t*, defined as $IndE_t$ minus $IndCF_t$. $FirmCF\_dec_t$ is firm-specific cash flows decile for year *t*, defined as CF_t minus $IndCF_t$. $Size\_dec_t$ is size decile in year *t*. BM_dec_t is book-to-market decile in year *t*, defined as *Total Shareholder´s Equity (Worldscope 03995)* scaled by *Market Capitalization in the Fiscal Period End (Worldscope 08002)*. $R\&D\_dec_t$ is research and development decile in year *t*, defined as *R&D Expense (Worldscope 01201)* scaled by *Market Capitalization in the Fiscal Period End (Worldscope 08002)*. *, ** and *** indicate statistical significance at the two-tailed 10%, 5%, and 1% level, respectively.

On table 6 we introduce earnings and industry earnings of family firms. Following Pincus et al. (2007) interpretation, we find evidence of earnings underpricing, consistent with panel A of table 4. We observe the underpricing is only felt in non-family firms and by implementing an underweighting strategy would earn a yearly abnormal return of 1%. The evidence presented in panel B does not provide any statistically significant findings.

Table 6: Regression tests of abnormal returns using equation (3a) and (3b)

Panel A: Equation 3a				
Variable	**Coefficient**	**Std. Error**	***t*-Stat**	**P>|t|**
Intercept	-0.106	0.033	-3.24	0.001 ***
$Earn\_dec_t$	0.010	0.003	2.75	0.006 ***
$Earn\_fd\_dec_t$	0.002	0.003	0.46	0.644
$Size\_dec_t$	0.009	0.003	2.85	0.004 ***
BM_dec_t	0.009	0.003	2.74	0.006 ***
$R\&D\_dec_t$	0.019	0.007	2.73	0.006 ***
Adjusted R^2				0.006
Observations				8,545

Panel B: Equation 3b				
Variable	**Coefficient**	**Std. Error**	***t*-Stat**	**P>|t|**
Intercept	-0.099	0.038	-2.61	0.009 ***
$IndE\_dec_t$	0.003	0.004	0.72	0.471
$IndE\_fd\_dec_t$	-0.001	0.007	-0.07	0.945
$FirmE\_dec_t$	0.005	0.004	1.40	0.163
$FirmE\_fd\_dec_t$	0.004	0.006	0.72	0.469
$Size\_dec_t$	0.010	0.003	3.11	0.002 ***
BM_dec_t	0.008	0.003	2.55	0.011 **
$R\&D\_dec_t$	0.018	0.007	2.58	0.010 ***
Adjusted R^2				0.005
Observations				8,545

In panel A, we present the results of estimating the following abnormal return regression $AR_{t+1} = \beta_0 + \beta_1 Earn\_dec_t + \beta_2 Earn\_FD\_dec_t + \beta_3 Size\_dec_t + \beta_4 BM\_dec_t + \beta_5 R\&D\_dec_t + et+1$. In panel B, we present results of the following regression $AR_{t+1} = \beta_0 + \beta_1 IndE\_dec_t + \beta_2 IndE\_fd\_dec_t + \beta_3 FirmE\_dec_t + \beta_4 FirmE\_fd\_dec_t + \beta_5 Size\_dec_t + \beta_6 BM\_dec_t + \beta_7 R\&D\_dec_t + e_{t+1}$. $Earn\_dec_t$ is earnings decile for year *t*, defined as *Net Income (Worldscope 04001)* scaled by average *Total Assets (Worldscope 02999)* in *t* and *t+1*. $Earn\_fd\_dec_t$ is family´s earnings decile in year *t*. $IndE\_dec_t$ is industry-wide earnings decile in year *t*, defined as average $Earn_t$ across sample firms in the same *ICBSSC* industry. $IndE\_fd\_dec_t$ is family´s industry-wide earnings decile in year *t*. $FirmCF\_dec_t$ is firm-specific cash flows decile for year *t*, defined as *Earn_dec* minus *IndE_dec*. $Size\_dec_t$ is size decile in year *t*. BM_dec_t is book-to-market decile in year *t*, defined as *Total Shareholder´s Equity (Worldscope 03995)* scaled by *Market Capitalization in the Fiscal Period End (Worldscope 08002)*. $R\&D\_dec_t$ is research and development decile in year *t*, defined as *R&D Expense (Worldscope 01201)* scaled by *Market Capitalization in the Fiscal Period End (Worldscope 08002)*. *, ** and *** indicate statistical significance at the two-tailed 10%, 5%, and 1% level, respectively.

On panel A of table 7 we introduce earnings and industry components of family firms. Following Pincus et al. (2007) interpretation, we find evidence of cash flow un-

derpricing, consistent with panel A of table 5. We observe the underpricing is only felt in non-family firms and by implementing an underweighting strategy, would earn yearly abnormal returns of 1.7%. Regarding panel B, we find evidence of firm-specific cash flows are underpricing, consistent with panel B of table 5. We observe the underpricing is only felt in non-family firms and by implementing an underweighting strategy, would earn a yearly abnormal return of 1.4%.

Table 7: Regression tests of abnormal returns using equation (4a) and (4b)

Panel A: Equation 4a					
Variable	**Coefficient**	**Std. Error**	***t*-Stat**	**P>|t|**	
Intercept	-0.121	0.360	-3.35	0.001	***
ACC_dec_t	-0.003	0.004	-0.95	0.343	
CF_dec_t	0.017	0.003	4.99	0.000	***
$ACC\_fd\_dec_t$	0.005	0.007	0.76	0.446	
$CF\_fd\_dec_t$	-0.001	0.006	-0.23	0.820	
$Size\_dec_t$	0.008	0.003	2.25	0.024	**
BM_dec_t	0.009	0.003	2.90	0.004	***
$R\&D\_dec_t$	0.019	0.007	2.73	0.006	***
Adjusted R^2					0.009
Observations					8,545

Panel B: Equation 4b					
Variable	**Coefficient**	**Std. Error**	***t*-Stat**	**P>|t|**	
Intercept	-0.120	0.046	-2.63	0.008	***
$IndACC\_dec_t$	0.001	0.004	0.06	0.948	
$IndCF\_dec_t$	0.003	0.004	0.82	0.409	
$FirmACC\_dec_t$	-0.004	0.004	-0.98	0.328	
$FirmCF\_dec_t$	0.014	0.004	3.97	0.000	***
$IndACC\_fd\_dec_t$	-0.001	0.008	-0.95	0.343	
$IndCF\_fd\_dec_t$	-0.001	0.008	-0.37	0.709	
$FirmACC\_fd\_dec_t$	0.015	0.011	1.33	0.183	
$FirmCF\_fd\_dec_t$	0.001	0.008	0.07	0.942	
$Size\_dec_t$	0.009	0.003	2.56	0.011	**
BM_dec_t	0.009	0.003	2.70	0.007	***
$R\&D\_dec_t$	0.018	0.007	2.58	0.010	***
Adjusted R^2					0.008
Observations					8,545

In panel A, we present the results of estimating the following pricing regression $R_{t+1} = \beta_0 + \beta_1 ACC\_dec_t + \beta_2 CF\_dec_t + \beta_3 ACC\_fd\_dec_t + \beta_4 CF\_fd\_dec_t + \beta_5 Size\_dec_t + \beta_6 BM\_dec_t + \beta_7 R\&D\_dec_t + e_t$. In panel B, we present results of the following regression $R_{t+1} = \beta_0 + \beta_1 IndACC\_dec_t + \beta_2 IndCF\_dec_t + \beta_3 FirmACC\_dec_t + \beta_4 FirmCF\_dec_t + \beta_5 IndACC\_fd\_dec_t + \beta_6 IndCF\_fd\_dec_t + \beta_7 FirmACC\_fd\_dec_t + \beta_8 FirmCF\_fd\_dec_t + \beta_9 Size\_dec_t + \beta_{10} BM\_dec_t + \beta_{11} R\&D\_dec_t + e_t$. ACC_dec_t is accruals decile for year *t*, defined as *Net Income (Worldscope 04001)* minus *Funds from Operations (Worldscope 04201)* minus *Funds from/for Other Operating Activities (Worldscope 04831)* scaled by average *Total Assets (Worldscope 02999)* in *t* and *t+1*. CF_dec_t is cash flow decile for year *t* defined as *Funds from Operations (Worldscope 04831)* plus *Funds from/for Other Operating Activities* (*Worldscope 04831*) scaled by average *Total Assets (Worldscope 02999)* in *t* and *t+1*. $ACC\_fd\_dec_t$ is family´s accruals decile for year *t*. $CF\_fd\_dec_t$ is family´s cash flow decile for year *t*. $IndACC\_dec_t$ is the industry-wide accruals decile in year *t*, defined as average ACC_t across sample firms in the same *ICBSSC* industry. $IndCF\_dec_t$ is the industry-wide cash flows decile in year *t*, defined as the difference between $IndE_t$ and $IndACC_t$. $FirmACC\_dec_t$ is the firm-specific accruals decile for year *t*. $FirmCF\_dec_t$ is firm-specific cash flows decile for year *t*. $IndACC\_fd\_dec_t$ is the family´s industry accruals decile in year *t*. $IndCF\_fd\_dec_t$ is the family´s industry cash flows decile in year *t*. *FirmACC_fd_dec* is the family´s firm-specific

accruals decile in year *t*. *FirmCF_fd_dec* is the family´s firm-specific cash flows decile in year *t*. *Size_dec*$_t$ is size decile in year *t*. *BM_dec*$_t$ is book-to-market decile in year *t*, defined as *Total Shareholder´s Equity (Worldscope 03995)* scaled by *Market Capitalization in the Fiscal Period End (Worldscope 08002)*. *R&D_dec*$_t$ is research and development decile in year *t*, defined as *R&D Expense (Worldscope 01201)* scaled by *Market Capitalization in the Fiscal Period End (Worldscope 08002)*. *, ** and *** indicate statistical significance at the two-tailed 10%, 5%, and 1% level, respectively.

6 – Conclusions

The objective of this research is to evaluate if being a family firm or a non-family firm has impact on the price of earnings and earnings components. We follow Pincus et al. (2007) to test if it is possible to obtain abnormal returns on an annual basis. We use a set of risk controls previously used in the literature by other authors (Fama & French, 1998; Pincus et al., 2007; Soares & Stark, 2011) for our *t+1* abnormal return model.

Our first research question, was to discover if there are differences in the pricing of earnings between family firms and non-family. First, we tested earnings and we found evidence of underpricing exclusively on non-family firms. Hence an underweighting strategy would earn a yearly abnormal return of 1%. Second, following Botsari and Meeks (2008), we decomposed earnings into its components to test for differences in the accrual and cash flow components. In the literature some authors suggest underpricing of cash flows and overpricing of accruals (Hui et al., 2016; Kraft et al., 2007). Unlike Pincus et al. (2007) in the U.K., we find evidence of underpricing the cash flow component, in which an underweighting strategy would earn a yearly abnormal return of 1.7%, solely concerning non-family firms. Regarding the accrual component we did not find evidence of mispricing neither overpricing, suggesting little evidence on the *Accrual´s Anomaly*. Nonetheless, our findings may suggest the existence of a *Cash Flow Anomaly* as suggested in Soares and Stark (2011). All the mentioned results were statistically significant although off small economic meaning.

Regarding our second research question, which was to discover if there are differences in the pricing of industry earnings and industry earning´s components between family and non-family firms, our results suggest it exists. Unlike Hui et al. (2016), we did not find evidence of overpricing firm-specific earnings neither underpricing industry-wide earnings. Contrary to our anticipation, after separating industry-wide earnings and firm-specific earnings into their components, we did not find evidence of overpricing firm-specific accruals neither underpricing industry-wide cash flows as suggested by Hui et al. (2016). Our evidence suggests underpricing solely for firm-specific cash flows of non-family firms. An underweighting strategy would yield a yearly abnormal

return of 1.4%. The mentioned results were statistically significant although off small economic meaning.

Given our findings, we suggest further exploring using a wider sample as it is still not clear if a mispricing exists on both family and non-family firms. It seems interesting to study if in other markets occurs underpricing of earnings, cash flows and firm-specific cash flows of non-family firms. Furthermore, it may exist an *Accrual´s Anomaly* or a *Cash Flow Anomaly* allowing arbitrage opportunities, for firms such as the case of the family and non-family firms.

7 – References

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